

The Dental Workforce in North Carolina: Trends, Challenges and Opportunities

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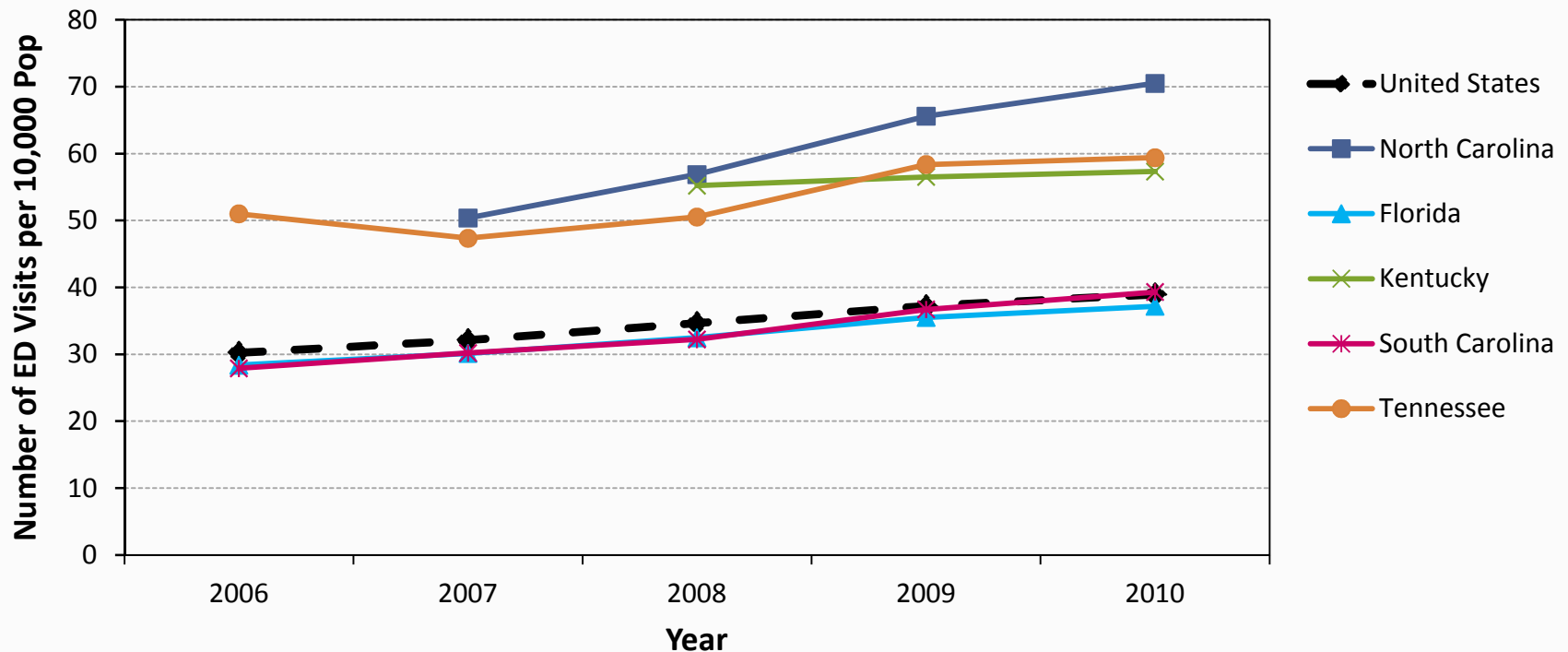
Overview of Presentation: The View from 30,000 Feet

- Access to oral health care is multifaceted, more complex than “counting noses”
- But basic data on workforce supply, distribution, demographic and practice characteristics can provide powerful evidence to inform policy
- Projections of future supply allow us to simulate effect of policy, workforce changes and new models of care
- State budget constraints create need to show “bang for buck” for public investments in education
- Rapid pace of health system change provides policy window to improve flexibility in how/where workforce deployed



NC has high per capita rate and most rapid increase in ED visits for dental disorders

Emergency Department Visits for ICD-9-CM All-Listed Diagnosis Code 525.9, Dental Disorder Not Otherwise Specified, per 10,000 Population, US and Select States, 2006-2010



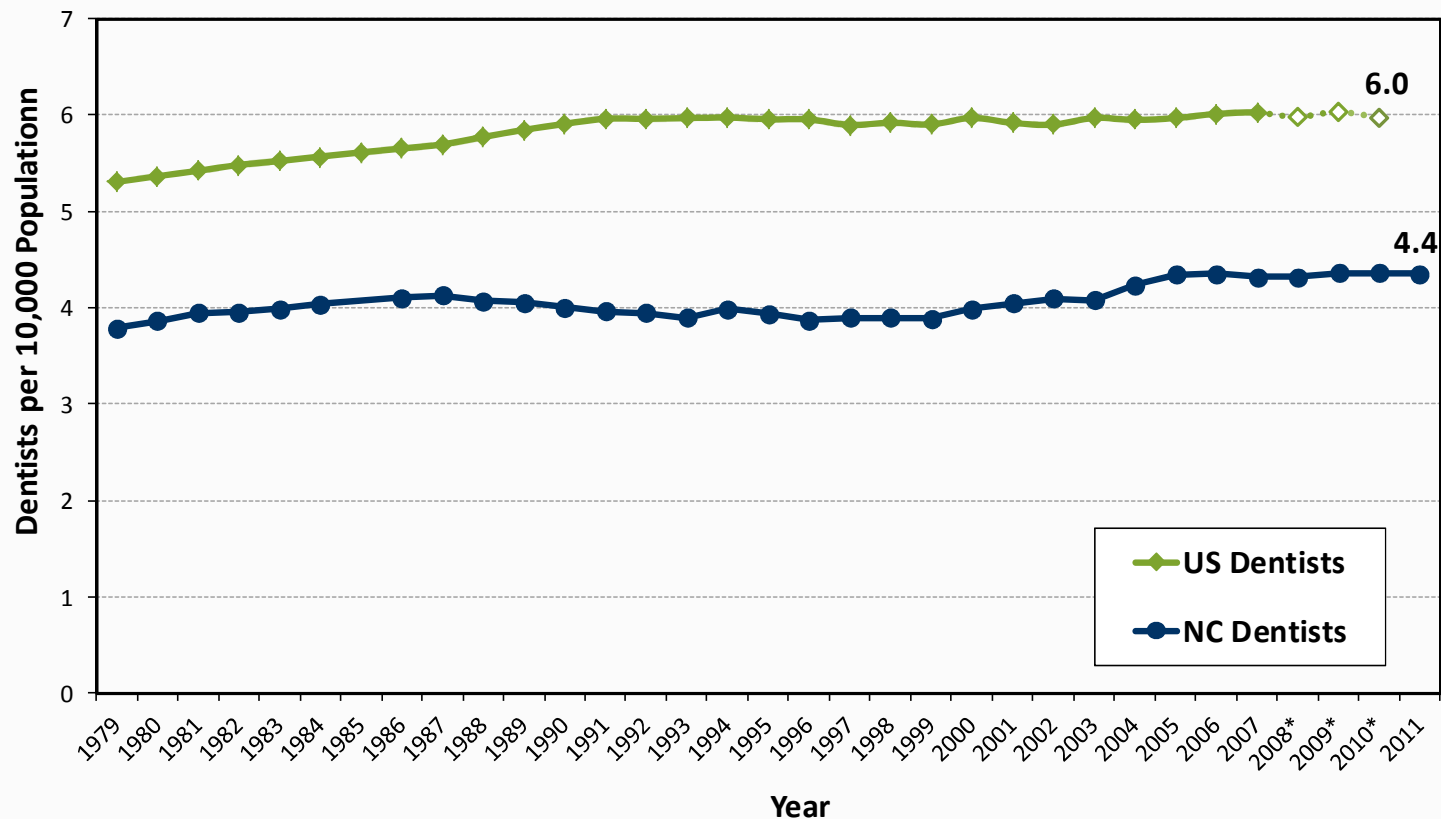
Source: State statistics from HCUP State Inpatient Databases and State Emergency Department Databases, Agency for Healthcare Research and Quality (AHRQ). *Weighted national estimates from HCUP Nationwide Emergency Department Sample (NEDS), Agency for Healthcare Research and Quality (AHRQ), based on data collected by individual States and provided to AHRQ by the States.

North Carolina versus the United States: Supply and Distribution



NC has consistently lagged behind US in dentists per capita

Dentists per 10,000 Population, US and NC, 1979-2011



*ADA number of total dentists in the U.S. in 2008 is 181,774, an increase of 73 from 2007. This increase is not consistent with that of previous years. Taking prior increases into account would result in an estimate of 182,028 dentists in the U.S. in 2008 and 185,202 in 2009. Total number of U.S. dentists in 2010 imputed using projected number of 2010 active dentists in the American Dental Association Dental Workforce Model: 2006-2030.

Sources: North Carolina Health Professions Data System, 1979 to 2010 with data derived from the North Carolina State Board of Dental Examiners; HRSA, Bureau of Health Professions; US Bureau of the Census; North Carolina Office of State Planning. Figures include all licensed active dental hygienists. North Carolina population data are smoothed figures based on 1980, 1990 and 2000 Censuses.
 *Note: US population data for 2001-2002 are slightly different than previous years and may partially account for the slight drop in dentists per 10,000 population at the national level.

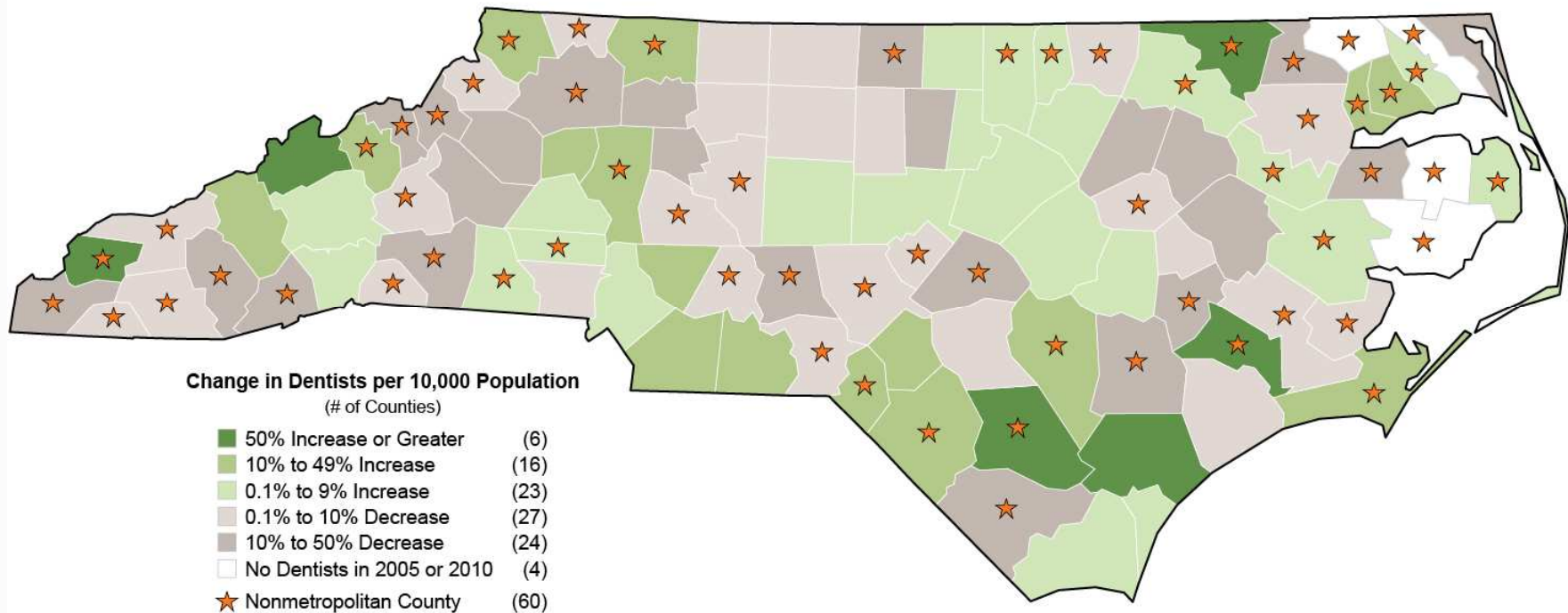
And has lagged behind most states as well...

Active Dentists per 10,000 Civilian Population

	1996		2000		2003		2007	
	Rank	Ratio	Rank	Ratio	Rank	Ratio	Rank	Ratio
United States		6.1		6.1		6.0		6.0
Top Ranked								
Massachusetts	4	8.1	2	8.1	2	8.2	1	8.2
Hawaii	1	8.9	1	8.2	1	8.2	2	8.1
New Jersey	5	8.1	4	7.9	3	7.9	3	8.1
New York	2	8.2	3	8.0	4	7.9	4	7.9
Bottom Ranked								
North Carolina	47	4.4	47	4.2	47	4.4	47	4.5
Alabama	46	4.4	46	4.3	45	4.4	48	4.4
Arkansas	48	4.1	48	4.0	48	4.1	49	4.1
Mississippi	49	4.0	49	3.9	50	4.0	50	4.1

Over half of NC's counties saw a loss or no change in ratio of dentists per capita

Change in Dentists per 10,000 Population North Carolina, 2005-2010

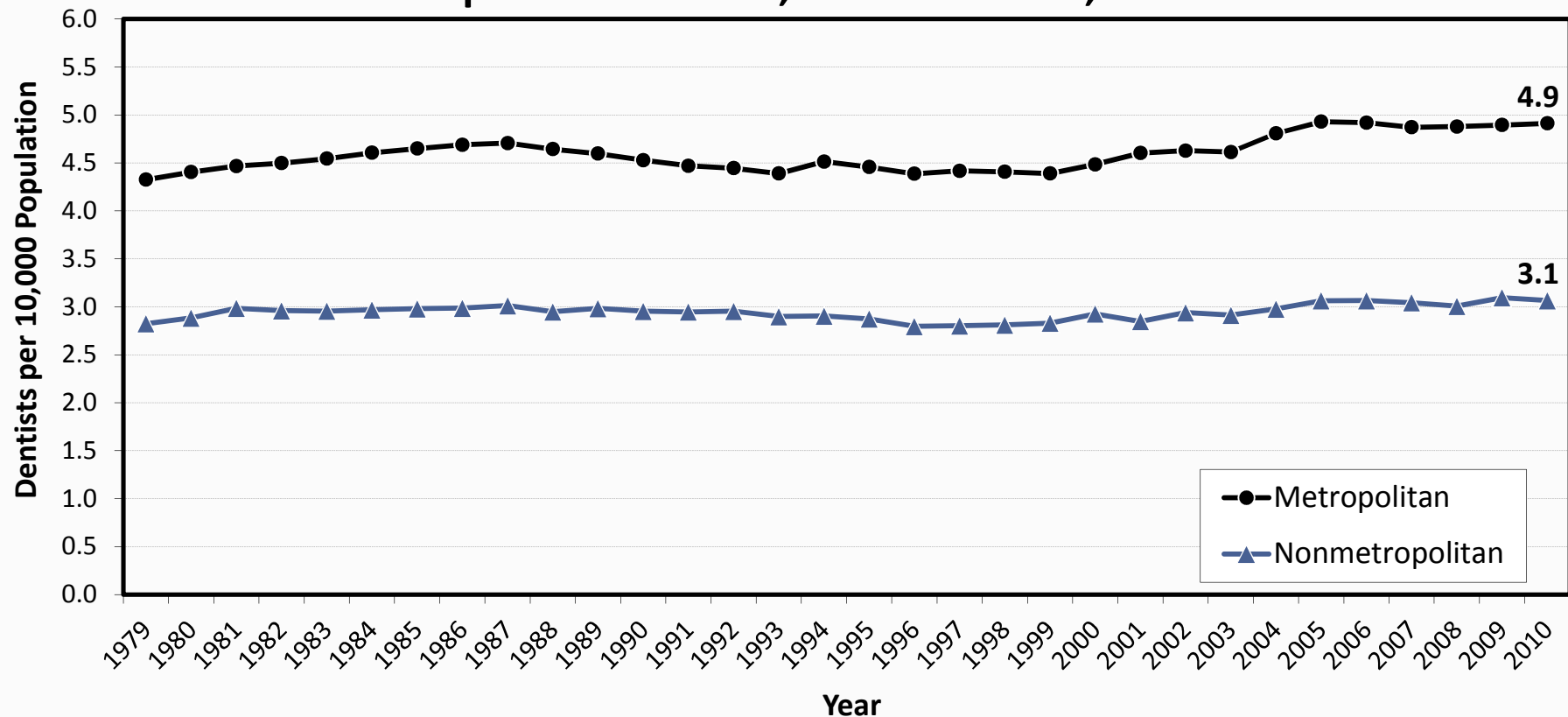


Note: Data include all active, in-state dentists. "Core Based Statistical Area" (CBSA) is the OMB's collective term for Metropolitan and Micropolitan statistical areas. OMB has not defined an affirmative title for areas outside CBSAs.

Source: NC HPDS, with data derived from the NC State Board of Dental Examiners, 2005 & 2010; US Census Bureau and Office of Management and Budget, December 2009.
Produced by: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Per capita supply of dentists in nonmetropolitan counties is stagnant...

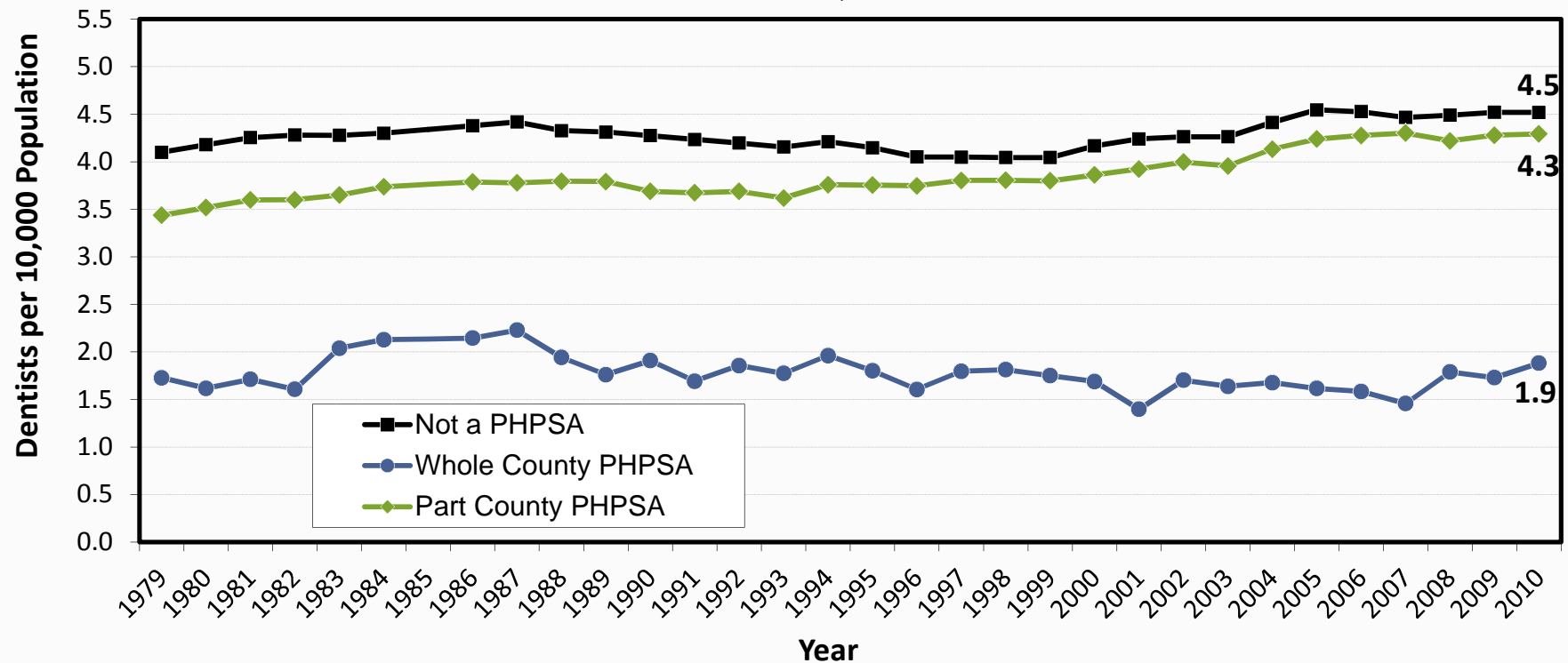
Dentists per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2010



Sources: North Carolina Health Professions Data System, with data derived from the NC State Board of Dental Examiners, 1979 to 2010; North Carolina Office of State Planning; Office of Management and Budget, 2006. Figures include all licensed, active, in-state dentists. North Carolina population data are smoothed figures based on 1980, 1990 and 2000 Censuses.

... And the gap between NC's most underserved and not underserved counties has been slowly widening

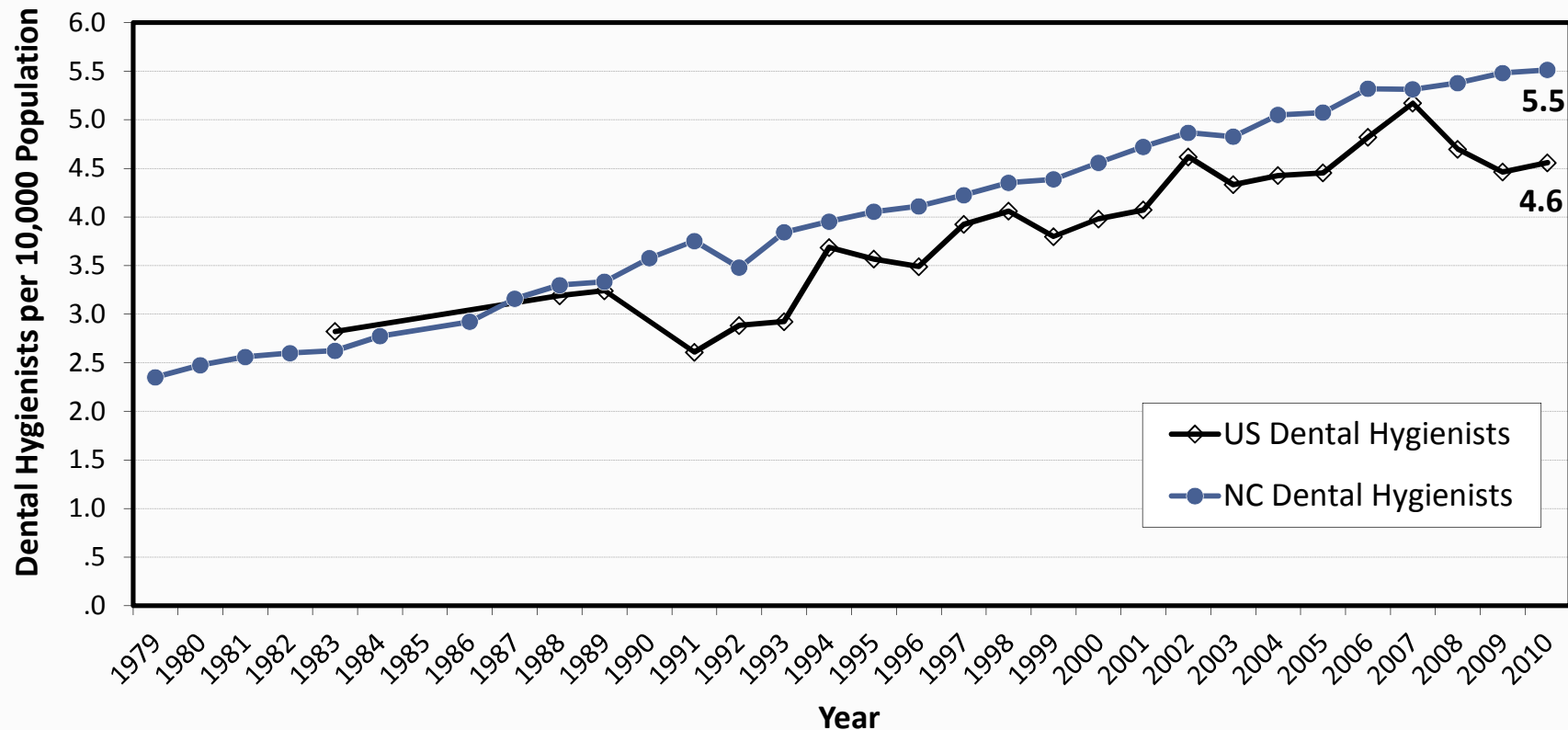
Dentists per 10,000 Population by Persistent Health Professional Shortage Area (PHPSA) Status North Carolina, 1979 to 2010



Sources: North Carolina Health Professions Data System, with data derived from the NC State Board of Dental Examiners, 1979 to 2010; North Carolina Office of State Planning. Source for Health Professional Shortage Areas: Area Resource File, HRSA, Department of Health and Human Services, 2006. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005, or in 6 of the last 7 releases of HPSA definitions. Figures include all licensed active in-state dentists. Population data are smoothed figures based on 1980, 1990 and 2000 Censuses.

NC has more dental hygienists per capita than the US average

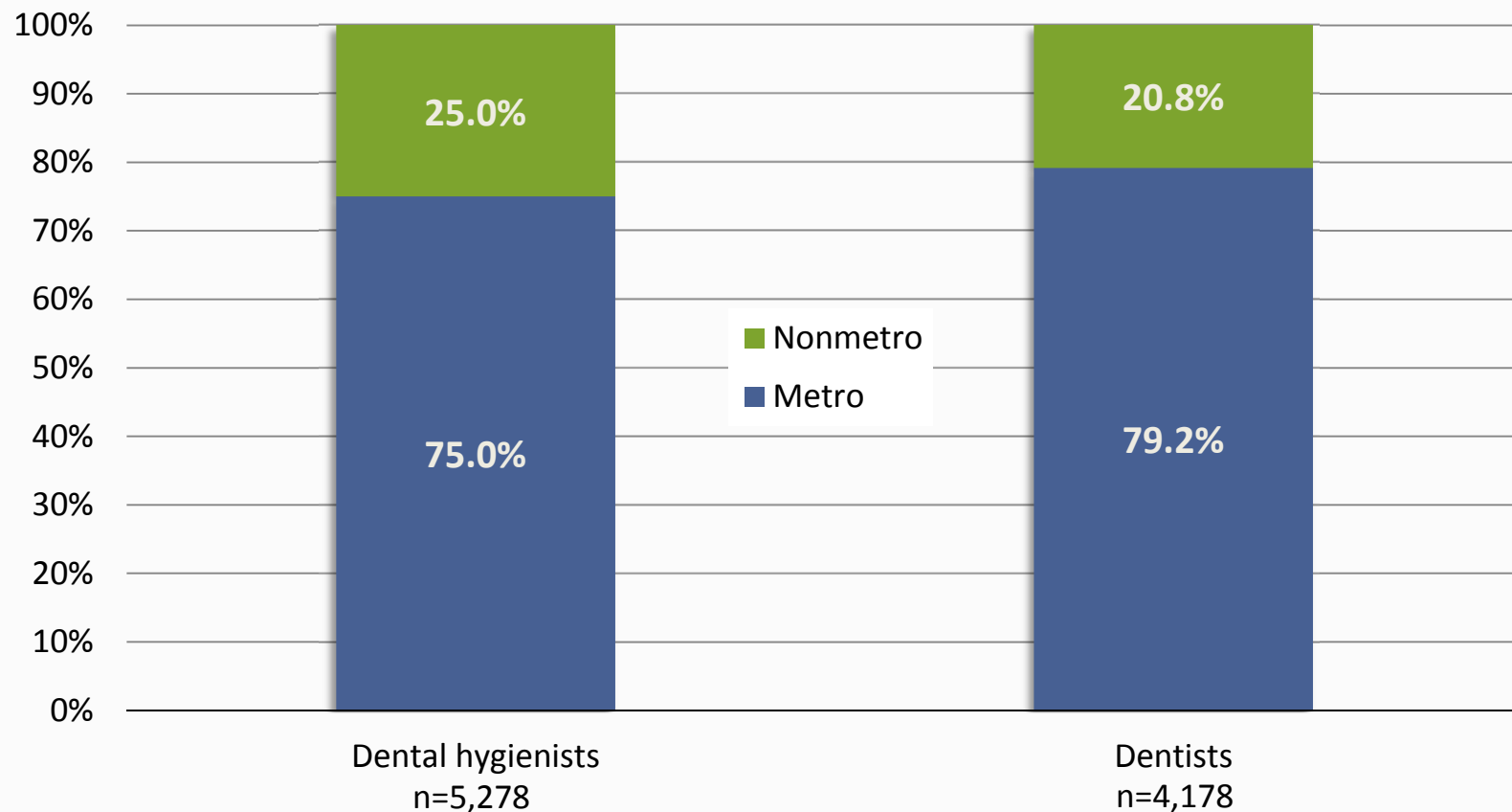
Dental Hygienists per 10,000 Population,
US and NC, 1979 to 2010



Sources: North Carolina Health Professions Data System, with data derived from the NC State Board of Dental Examiners 1979 to 2010; HRSA, Bureau of Health Professions; US Bureau of the Census; North Carolina Office of State Planning. Figures include all licensed active dental hygienists. North Carolina population data are smoothed figures based on 1980, 1990 and 2000 Censuses.

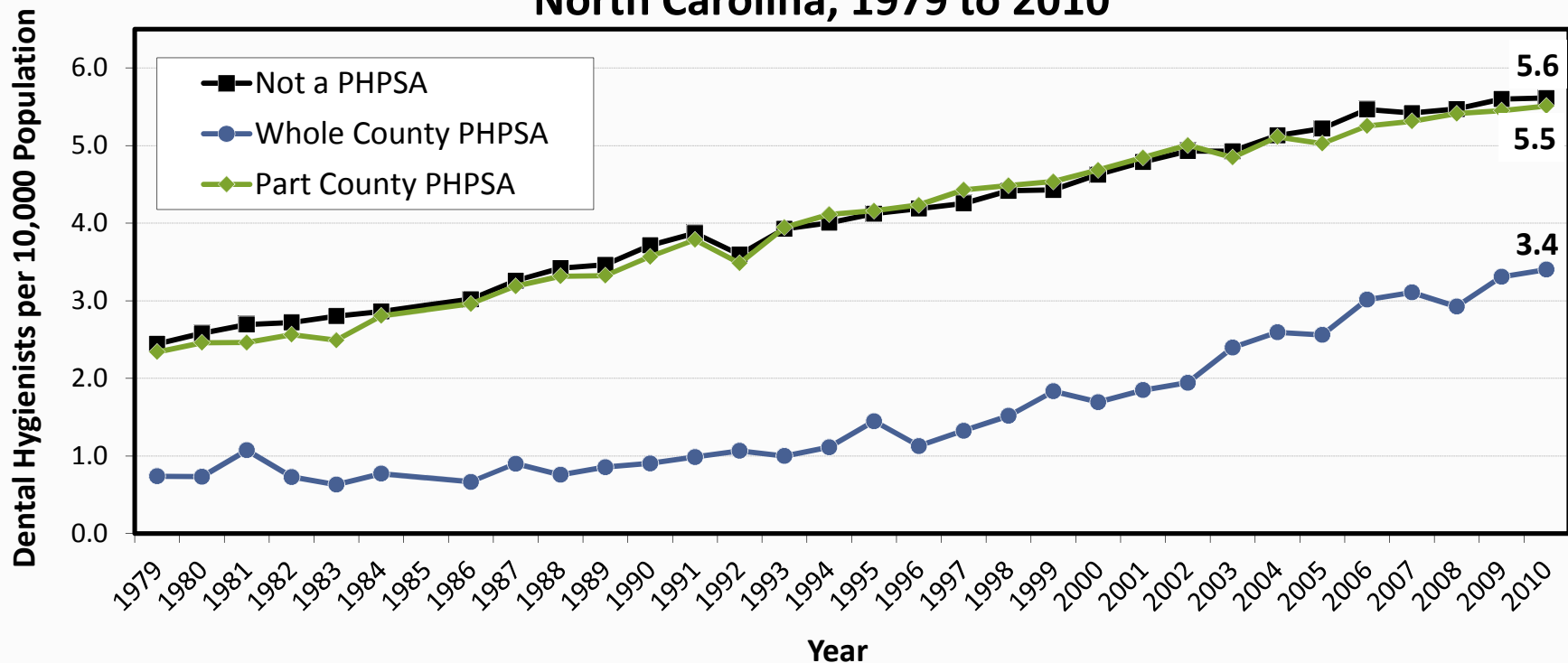
Dental hygienists slightly more likely than dentists to practice in nonmetropolitan counties

**NC Dentists vs. Dental Hygienists
in Metropolitan and Nonmetropolitan Counties, 2010**



Unlike dentists, hygienists experienced some growth in supply in NC's most underserved counties

**Dental Hygienists per 10,000 Population by Persistent Health Professional Shortage Area (PHPSA) Status
North Carolina, 1979 to 2010**



Sources: North Carolina Health Professions Data System, with data derived from the NC State Board of Dental Examiners, 1979 to 2010; North Carolina Office of State Planning. Source for Health Professional Shortage Areas: Area Resource File, HRSA, Department of Health and Human Services, 2006. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005, or in 6 of the last 7 releases of HPSA definitions. Figures include all licensed active in-state dental hygienists. Population data are smoothed figures based on 1980, 1990 and 2000 Censuses.

Demographic and Practice Characteristics

Trends look smooth but there is a ~10% churn in workforce every year

NC Dentist Supply: 2006-2011

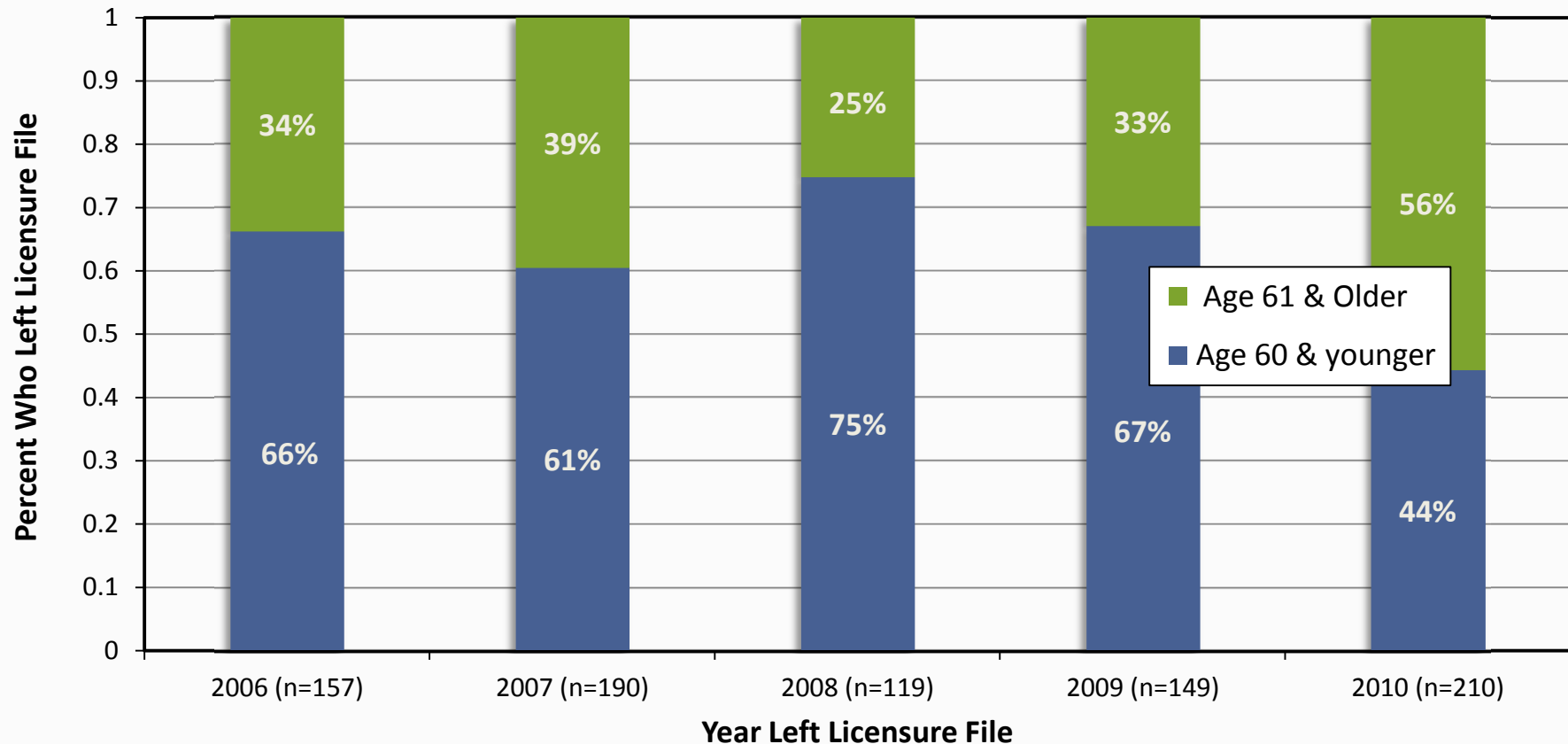


Source: North Carolina Health Professions Data System, with data derived from the North Carolina State Board of Dental Examiners, 2006-2011. Prepared 2/28/2013.

Counts include active, instate dentists. Note: Newly licensed dentists are those who are new to file with a license date in the current or previous year. New active dentists are those who were licensed in NC in an earlier year but were either inactive or active out of state in the previous year.

Fewer dentists left workforce during recession but older dentists now retiring in greater numbers

Percent of Dentists Who Left Licensure File by Age, 2006-2011



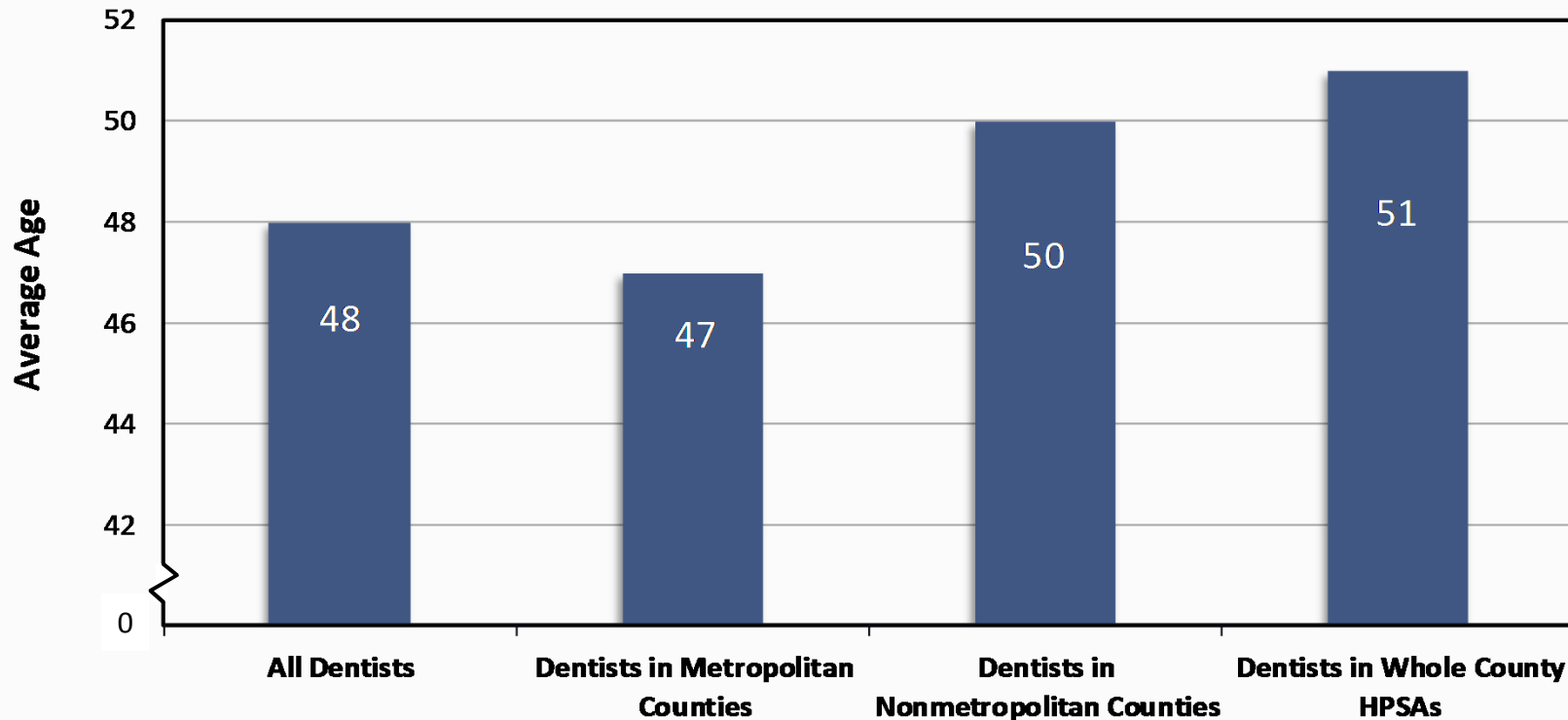
Source: North Carolina Health Professions Data System, with data derived from the North Carolina State Board of Dental Examiners, 2006-2011. Prepared 2/28/2013.

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North Carolina's dental workforce is graying

Average Age of NC Dentists by Region, 2009



4 counties in NC have dentists whose average age is 60 years or older

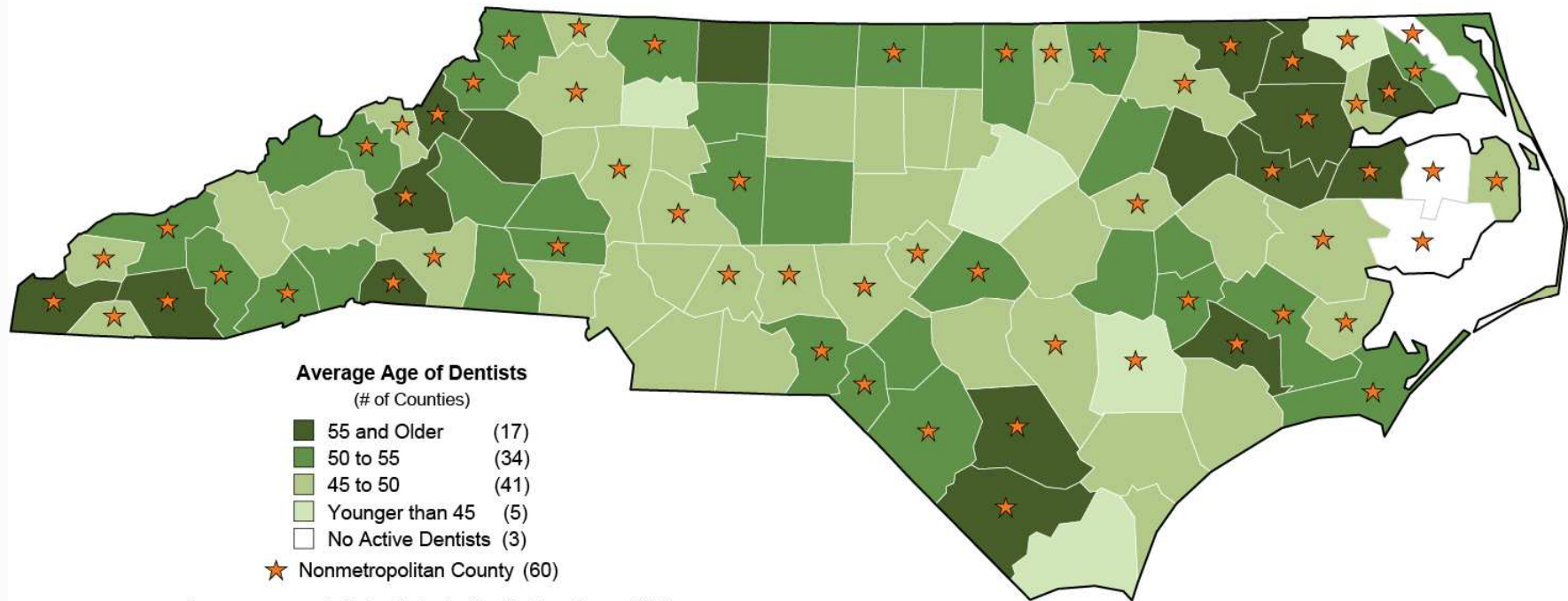
Note: Three dentists were missing age. Sources: North Carolina Health Professions Data System with data derived from the North Carolina State Board of Dental Examiners, 2009. Figures include active, instate dentists licensed in North Carolina as of October 31, 2009.



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Rural, contiguous counties with older dentists are a concern

**Average Age of Active Dentists
North Carolina, 2011**

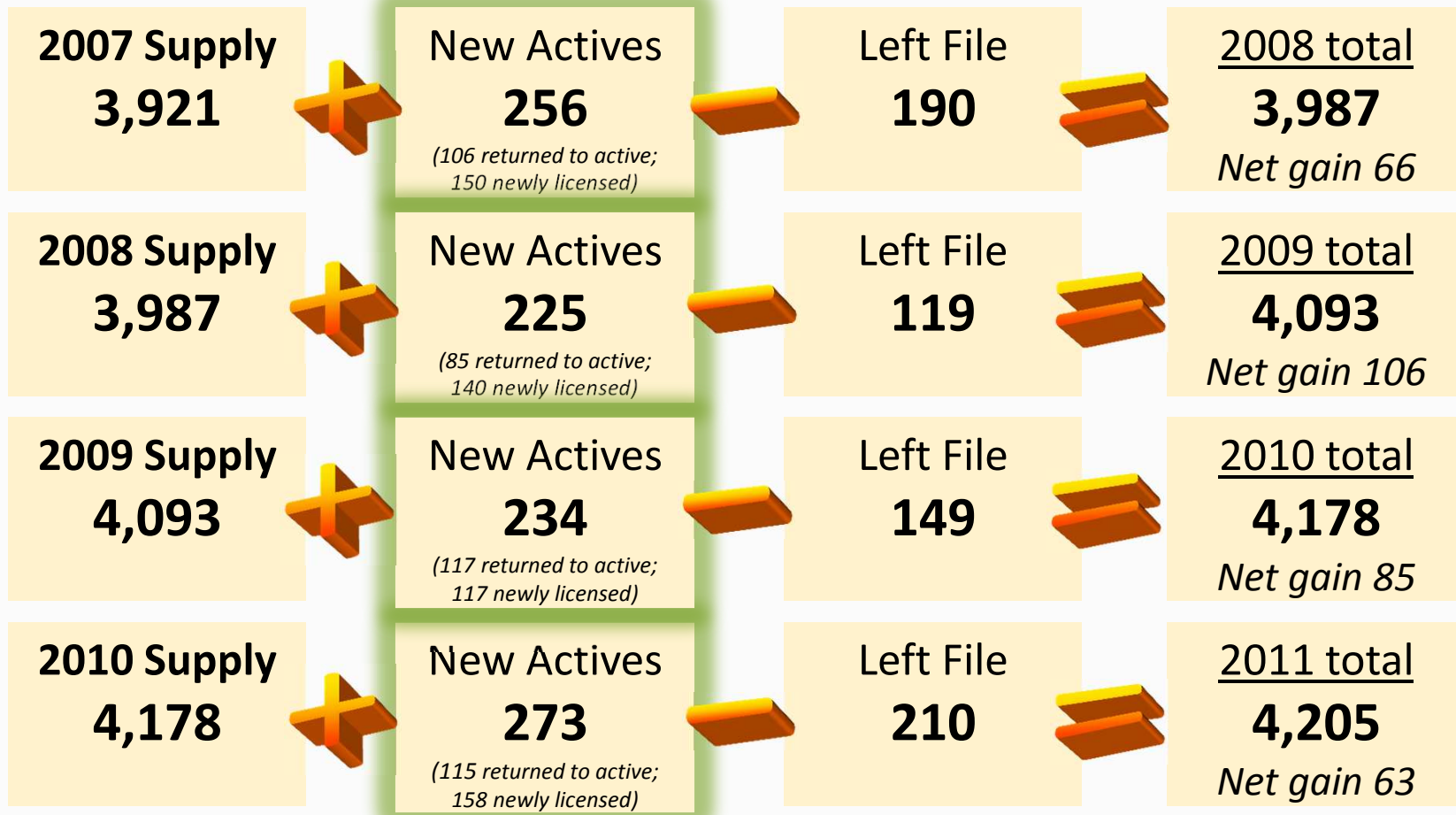


Average age of all dentists in North Carolina = 47.8

Note: Data include all active, in-state dentists licensed in North Carolina as of October 31, 2011. Age data were missing for 6 dentists. Core Based Statistical Areas are current as of the December 2009 update. Nonmetropolitan counties include micropolitan and counties outside of CBSAs. Source: NC HPDS, with data derived from the NC State Board of Dental Examiners, 2011; US Census Bureau and Office of Management and Budget, December 2009. Produced by: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Now let's focus on the new entrants to the dental workforce

NC Dentist Supply: 2006-2011

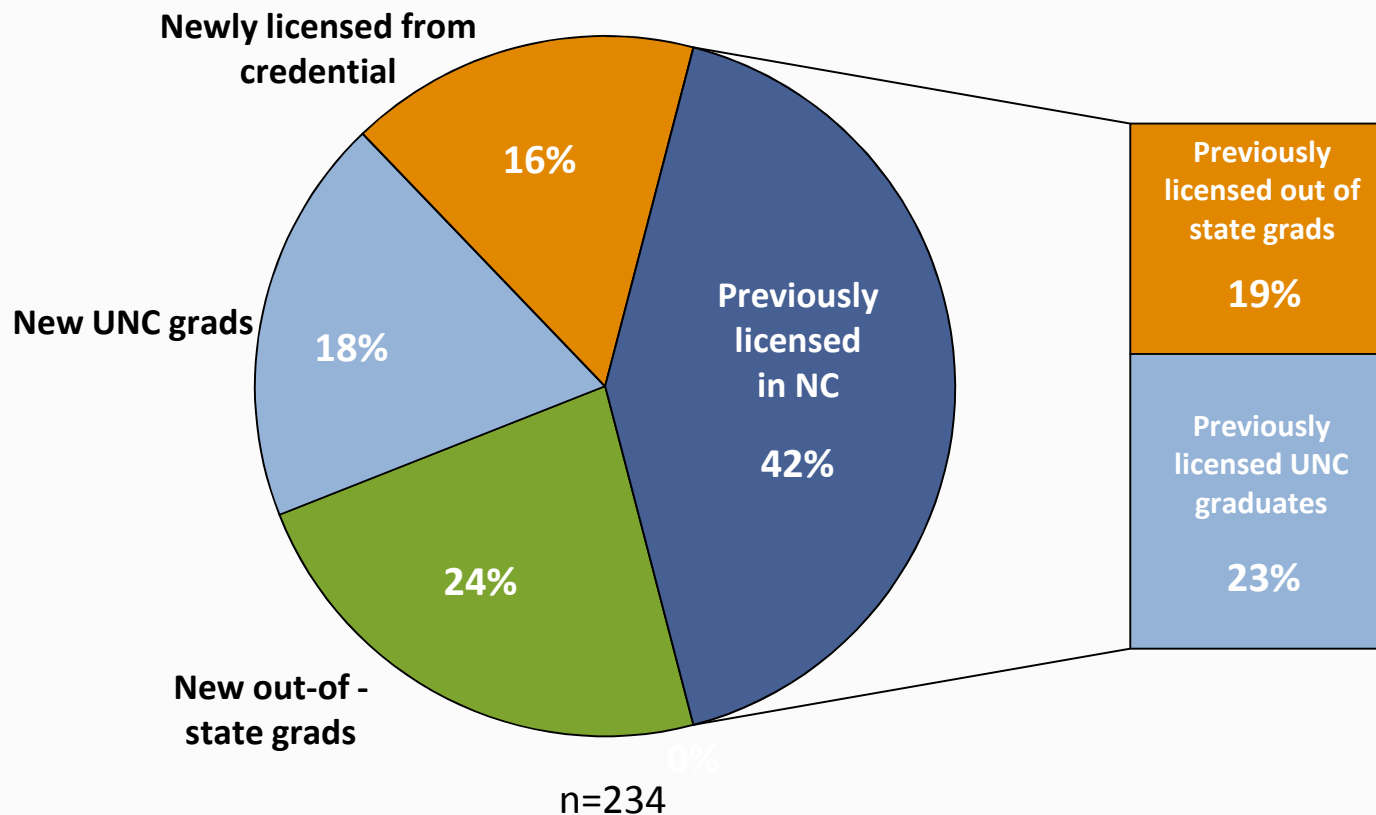


Source: North Carolina Health Professions Data System, with data derived from the North Carolina State Board of Dental Examiners, 2006-2011. Prepared 2/28/2013.

Counts include active, instate dentists. Note: Newly licensed dentists are those who are new to file with a license date in the current or previous year. New active dentists are those who were licensed in NC in an earlier year but were either inactive or active out of state in the previous year.

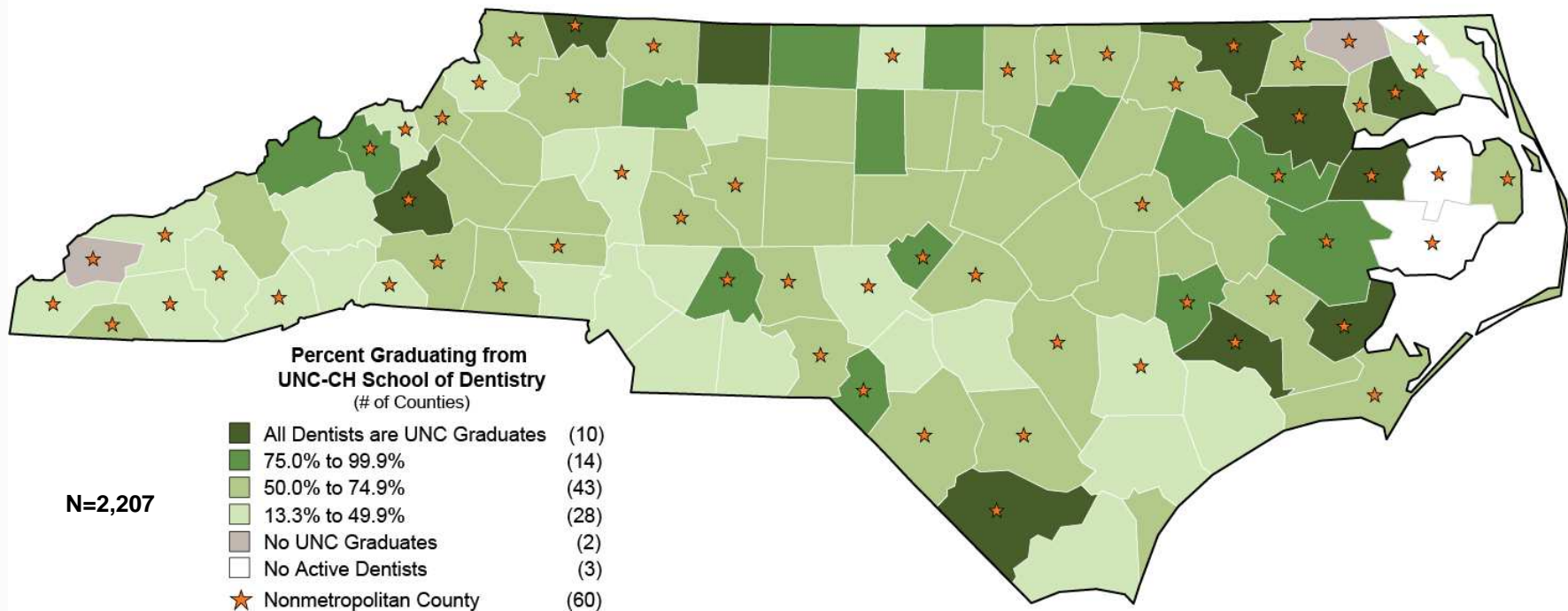
Where do our new dentists come from?

Gain in NC Dentists, 2010



More than half of NC's overall dentist workforce graduated from UNC

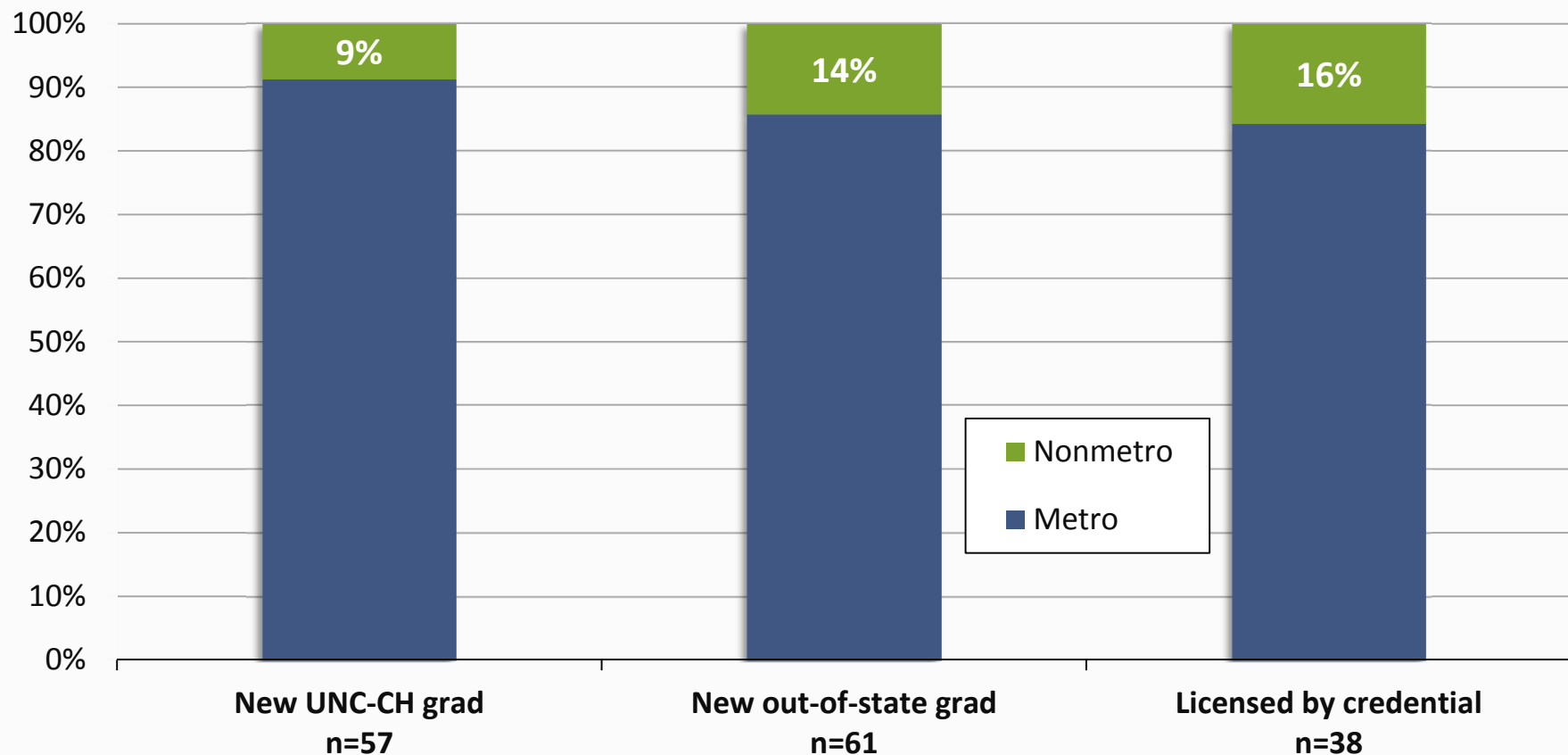
Percent of Active Dentists who Graduated from UNC-Chapel Hill Dental School North Carolina, 2011



Note: Data include all active, in-state dentists licensed in North Carolina as of October 31, 2011. Training location was missing for 11 dentists. Core Based Statistical Areas are current as of the December 2009 update. Nonmetropolitan counties include micropolitan and counties outside of CBSAs. Source: NC HPDS, with data derived from the NC State Board of Dental Examiners, 2011; US Census Bureau and Office of Management and Budget, December 2009. Produced by: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

But new UNC-CH grads less likely to practice in rural areas

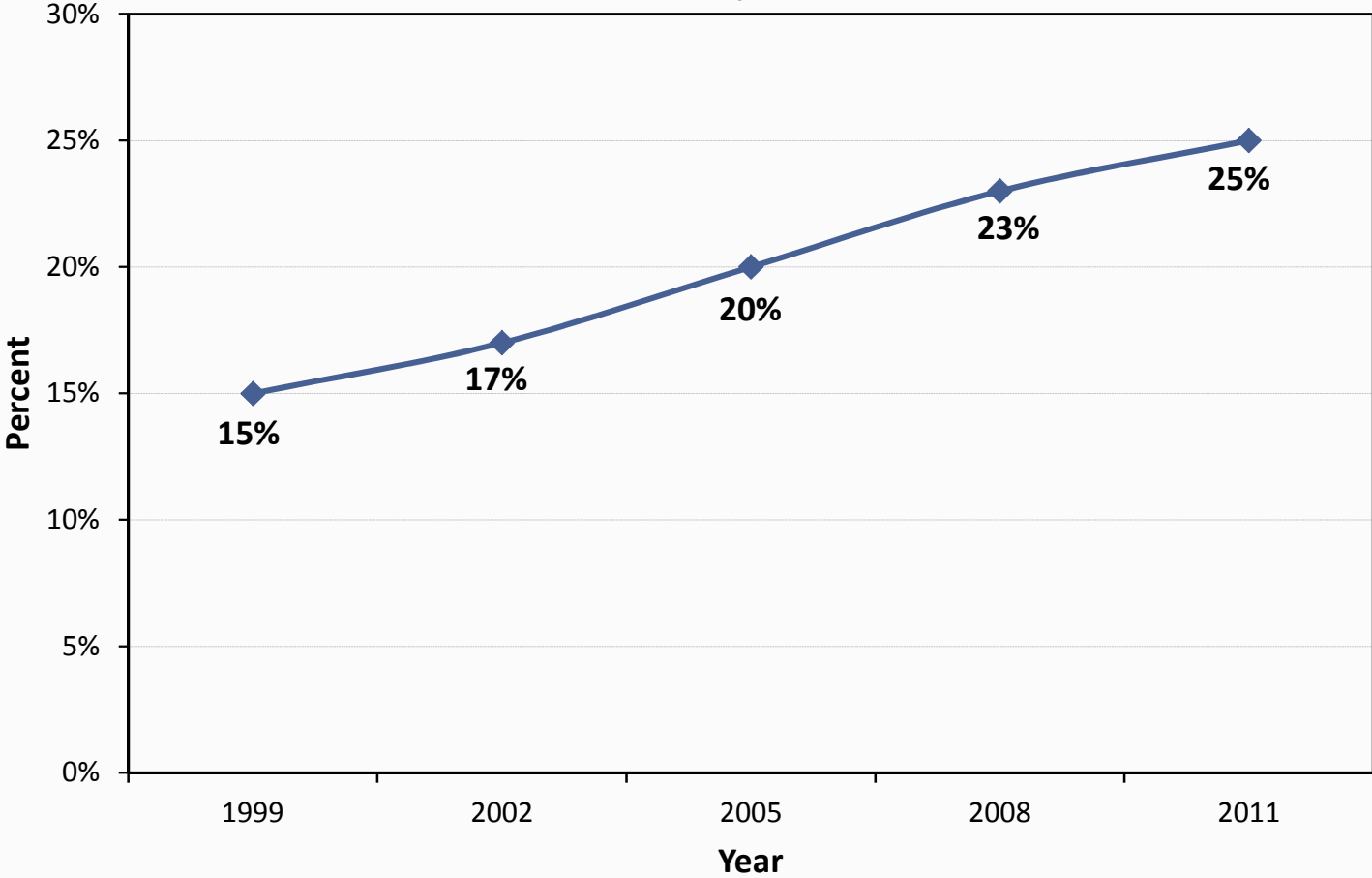
Practice Location of Newly Licensed Dentists,
North Carolina, 2009



Source: North Carolina Health Professions Data System with data derived from the North Carolina State Board of Dental Examiners, 2009. Figures include active, instate dentists licensed in North Carolina as of October 31, 2009.

Percent of women in workforce increasing

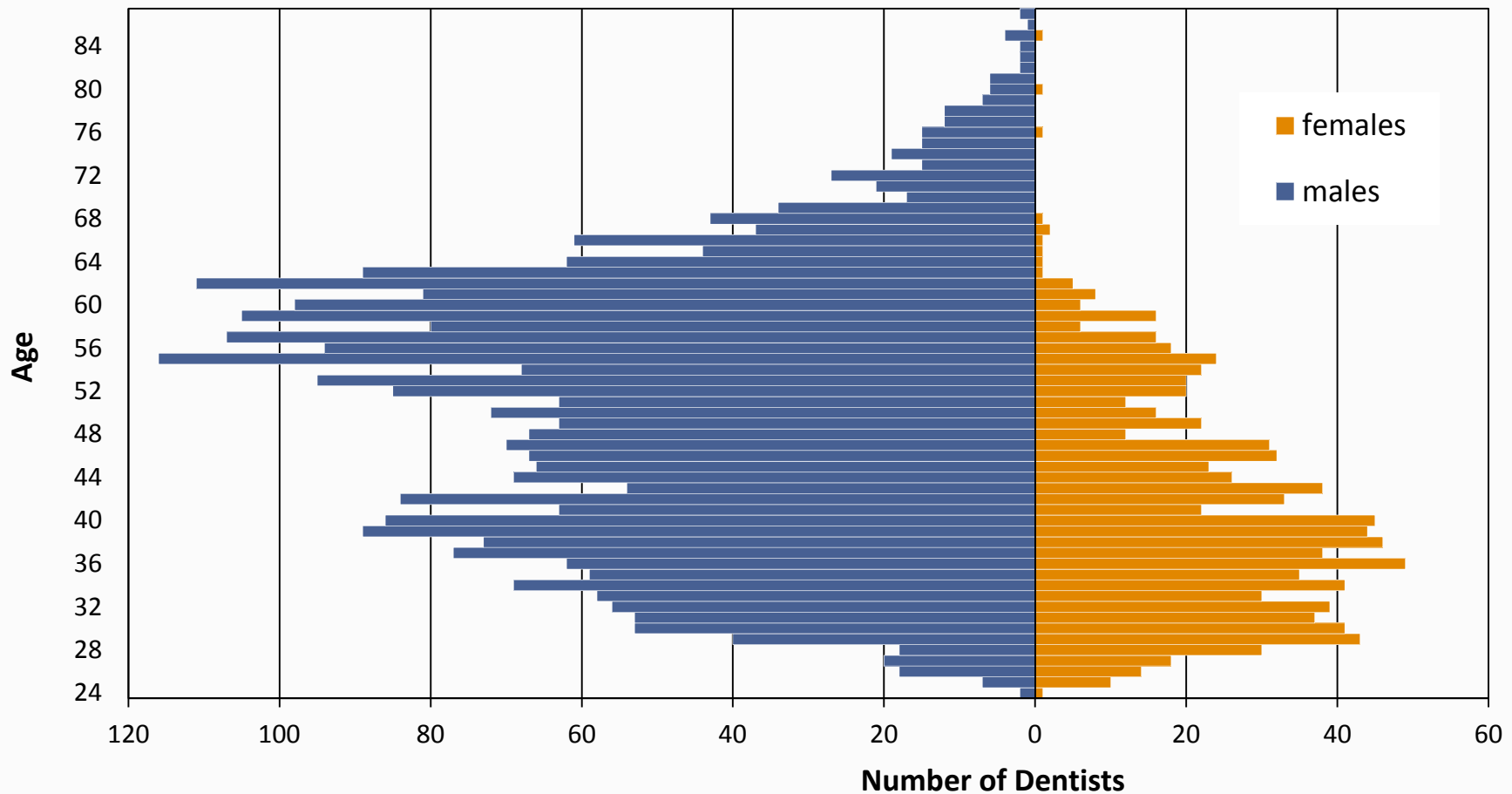
Percentage of Dentists Who Are Female,
North Carolina, 1999-2011



Source: North Carolina Health Professions Data System with data derived from the North Carolina State Board of Dental Examiners, 1999-2011.

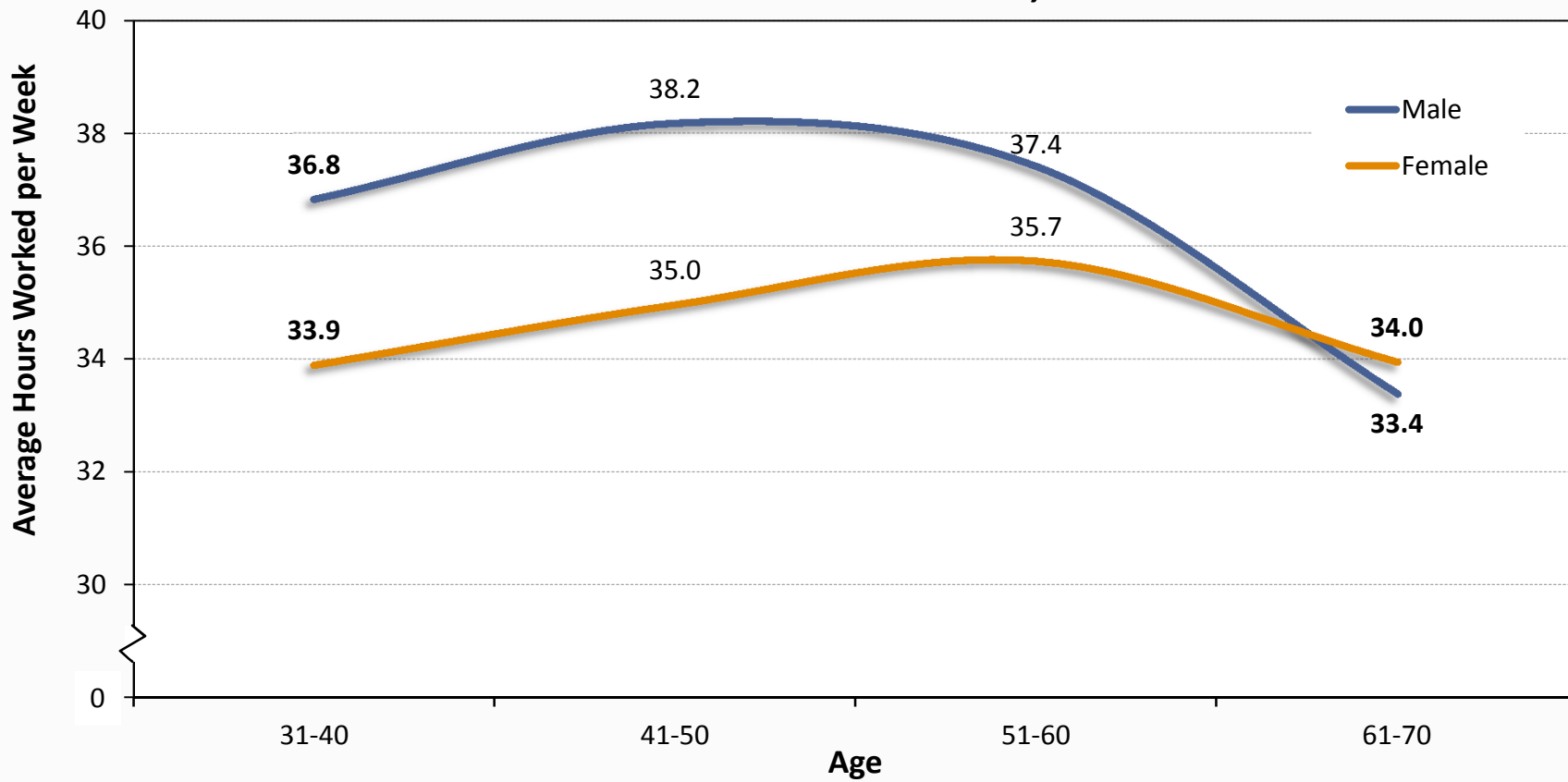
Male dentists are older than female dentists

Active NC Dentists by Age and Sex, 2010



Biggest driver of workforce supply is FTE: Male dentists' hours peak in mid-40s, Female dentists peak in mid-50s

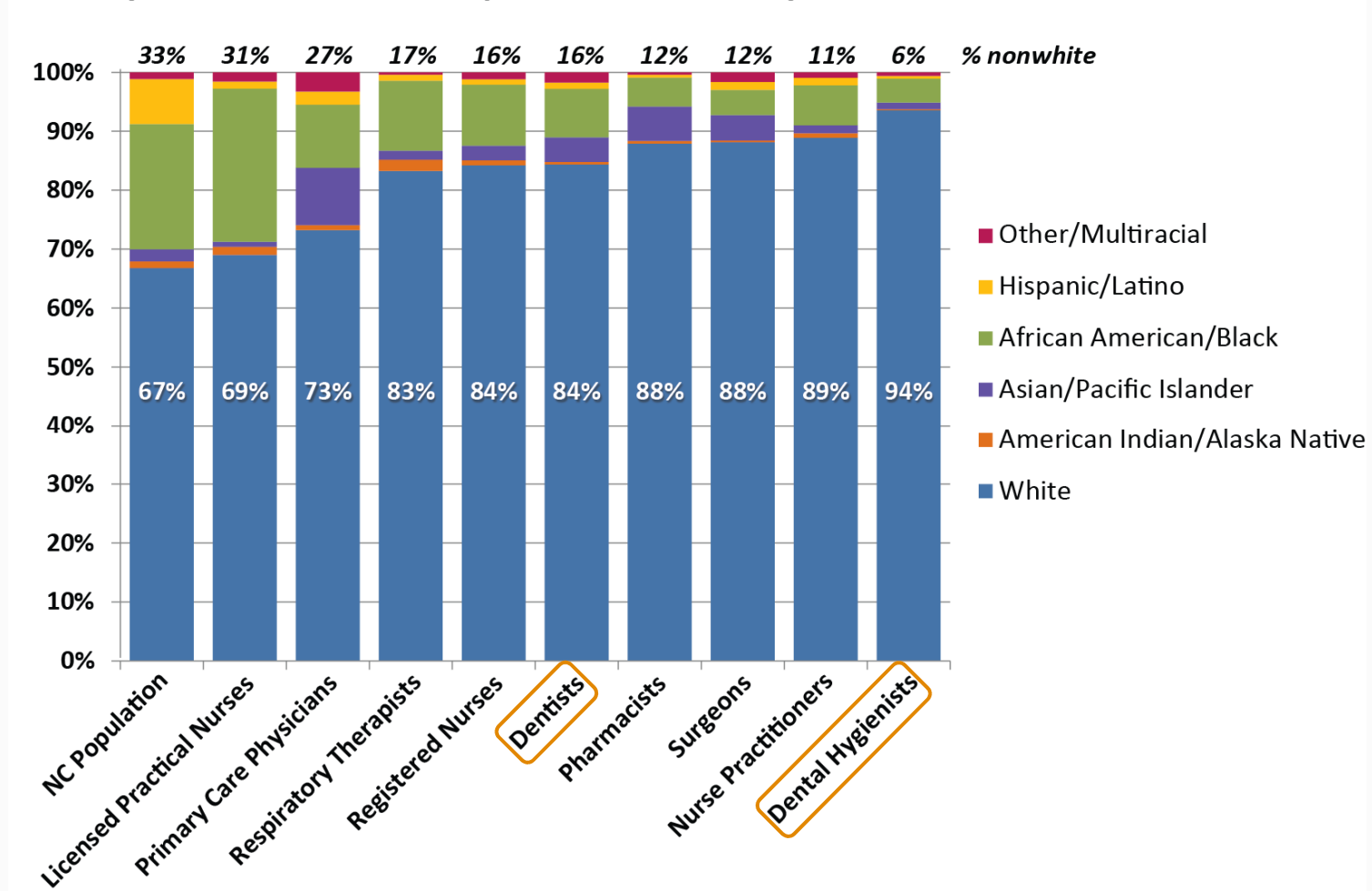
Average Number of Hours Worked per Week by Age and Sex,
North Carolina Dentists, 2010



Sources: North Carolina Health Professions Data System with data derived from the North Carolina State Board of Dental Examiners, 2010. Figures include active, instate dentists licensed in North Carolina as of October 31 of the respective year.

Race/Ethnicity of dentist and dental hygienist workforce falls short of matching population diversity

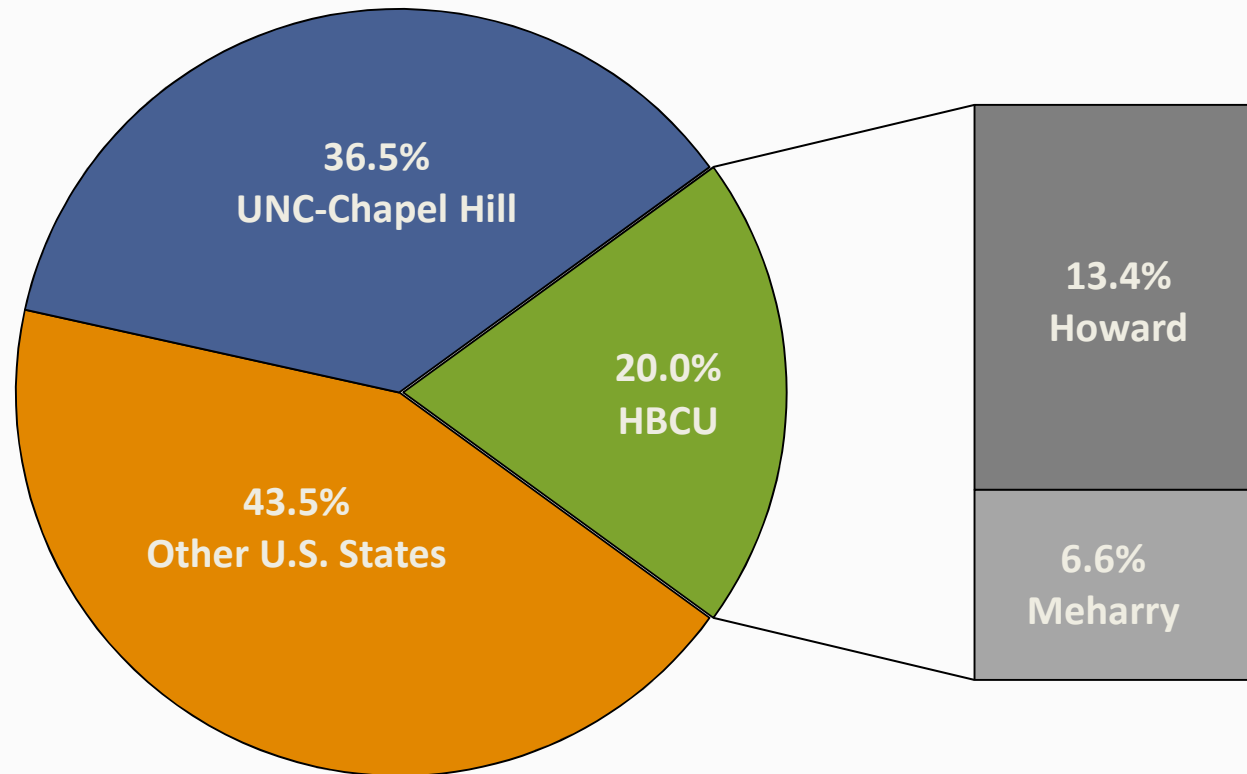
Diversity of North Carolina's Population vs. Diversity of Selected Health Professions, 2009



Sources: North Carolina Health Professions Data System with data derived from the respective licensing board, 2009. Data include active, instate health professionals, and active, instate, non-federal, non-resident-in-training physicians.

Most of NC's non-white dentists educated out of state

**Non-White Dentists by School
North Carolina, 2009**



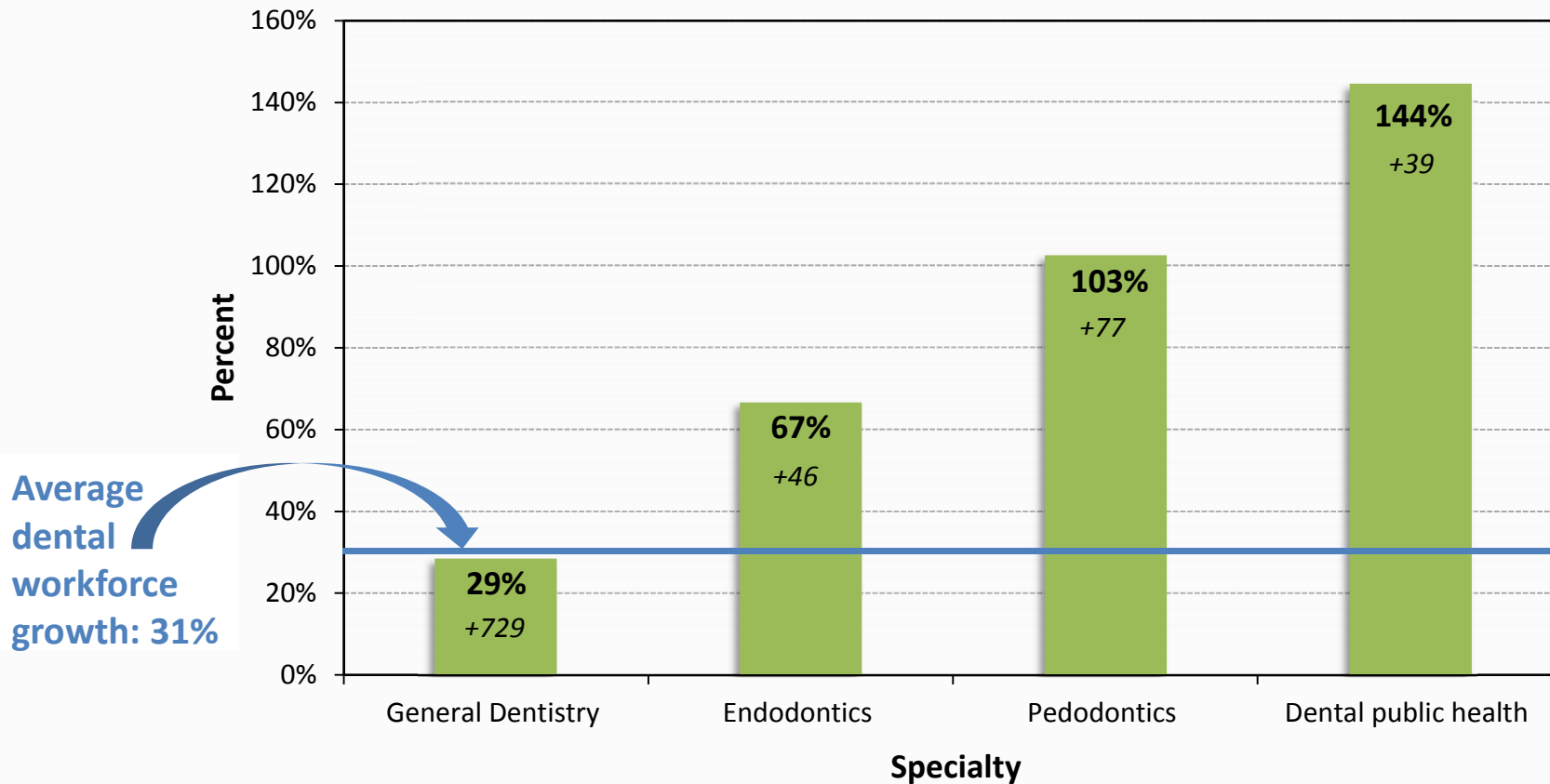
n=635

About three out of four North Carolina dentists are in general practice

Specialty 2011	
<i>General Practice</i>	78% (3,278)
Orthodontics	6% (254)
Pediatric Dentistry	4% (160)
Oral Surgery	4% (159)
Endodontics	3% (116)
Periodontics	2% (106)
Public Health	2% (70)
Prosthodontics	1% (52)
Oral/Maxillofacial Radiology	<1% (8)

Pediatric and public health dentists are fastest growing specialties

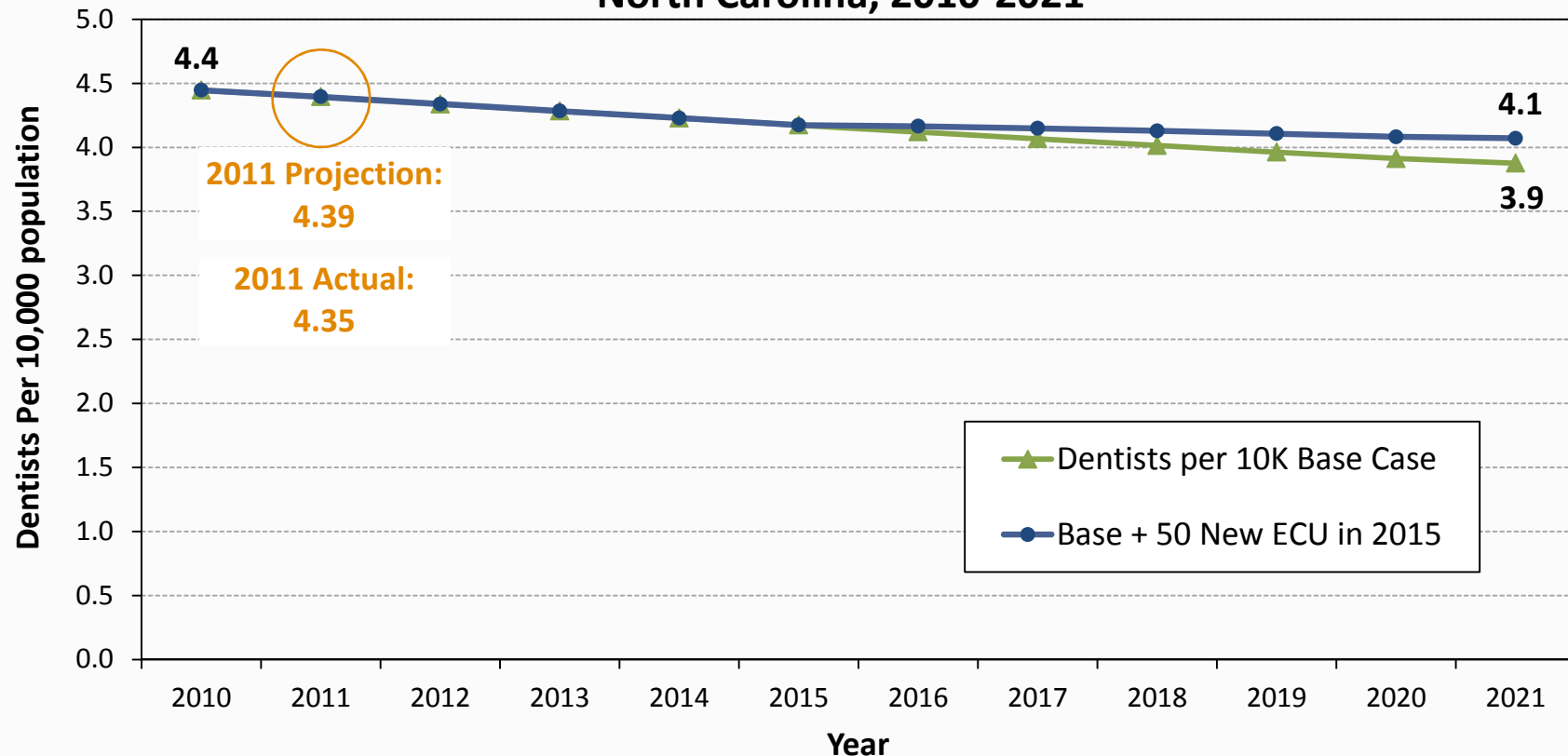
Percent Growth by Dental Specialty, 2000-2010



Projections and Implications

What will dentist workforce look like in 20 years?

Projected Supply of Dentists per 10,000 Population, North Carolina, 2010-2021



Source: NC Health Professions Data System, Cecil G. Sheps Center for Health Service Research, UNC-CH, January 2012.

Notes: Base case shows scenario with no enrollment increases. Base year for projection (2010) uses data derived from the NC State Board of Dental Examiners and includes all active and in-state dentists in that year. 90% retention rate assumed overall. 65% retention rate for UNC-CH based on average of 5 years data from UNC-CH grads. Model accounts for in and out-migration and aging of the workforce. Population estimates and projections are from LINC, accessed April 12, 2011. As of March 12, 2012 neither UNC nor ECU are expanding dental school class size.

Measuring return on investment of public funds spent on education

- Recent policy focus on measuring the “social accountability” of medical education
- Importance of tracking graduates and using data to inform program planning and workforce policy
- What is role of NC’s medical schools in improving supply, distribution and diversity of the workforce?
- Since 1993, Sheps Center and AHEC have tracked medical students, now working to extend this work to include medical residents



Medical Student Tracking

- 1993: North Carolina Legislature concerned about primary care shortage
- Required four medical schools to develop programs to increase percentage of primary care graduates
- Set goal for UNC and ECU at 60%
- Set goal for Duke and Wake Forest at 50%
- Required that the Board of Governors track progress and report regularly to General Assembly



NC medical students: Retention of graduates in primary care after five years

What is Class of 2005 Doing in 2010?

School	2005 Graduates	% in Primary Care (Anywhere in US)	% in Primary Care (in NC)
Duke	78	23%	8%
ECU	73	59%	41%
UNC-Chapel Hill	152	38%	21%
Wake Forest	105	37%	17%
Total	408	38%	21%

Prepared by the North Carolina Health Professions Data System and the North Carolina AHEC Program.

Retention in North Carolina of Class of 2005 in 2010: Primary Care

NC Medical Students: Retention in Primary Care in NC's Rural Areas

Total Number of 2005 graduates in training of practice as of 2010:

408

Initial residency choice of primary care

261 (64%)

In training/practice in primary care in 2010:

155 (38%)

In primary care in NC in 2010:

86 (21%)

In PC in rural NC:

10 (2%)

Class of 2005
(N=422 graduates)

Transformed health system will require transformed workforce

Health systems, AHEC, universities, community colleges, regulators, professional bodies need to work together to prepare

- Health professionals already in the workforce to:
 - take on new roles
 - shift to community settings
 - alter the types of services they provide
- New types of health professionals with competencies required in new models of care
- New graduates and existing workers to better function in team-based models of care



Questions?

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